List of all Operational Improvements in the NAS Architecture 6 database

Show Operational Improvement Summaries

Service Group Air Traffic Services

Service ATC-Advisory

Capability NAS Status Advisory

Operational Improvement

Current NAS Status Advisory (103301)

Pilots require NAS status updates, which are essential to safety and efficiency. These updates and information that was not readily available during flight planning are either broadcast or provided directly to in-flight aircraft by specialists at the flight service station/automated flight service station, controllers at air traffic control facilities, and personnel at airline operations centers and other facilities. NAS status includes changes to the operational status of airspace, airports, navigational aids, in-flight or ground hazards, traffic management directives, and other information. Pilots receive some NAS status information, including runway status and weather information, via digital broadcast of automatic terminal information.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Automated Surface Observing System Controller Equipment - Information Display System
Common Automated Radar Terminal System - Model IIE
Common Automated Radar Terminal System - Model IIIA
Common Automated Radar Terminal System - Model IIIE
Display System Replacement
Enhanced Terminal Voice Switch
Enhanced Traffic Management System
High Frequency Communications
Integrated Communications Switching System Type I
Integrated Communications Switching System Type II
Integrated Communications Switching System Type III
Model One Full Capacity
Rapid Deployment Voice Switch Type I
Rapid Deployment Voice Switch Type II
Rapid Deployment Voice Switch Type IIA
Standard Terminal Automation Replacement System
Systems Atlanta Information Display System
Tower Data Link System Refresh
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios
Very High Frequency Airborne Radios
Very High Frequency Ground Radios
Very High Frequency Omnidirectional Range
Very High Frequency/Ultra High Frequency Emergency Communications Transceivers - Terminal

Issues

none identified

Operational Improvement

On-Demand NAS Flight Information (103305)

Improving the ability of equipped aircraft to access aeronautical information during flight is essential. Pilots require integrated and affordable flight information services, through implementation of a national Flight Information Services Broadcast.

Benefits

Safety is enhanced because the pilot has real-time access to data-linked information on the configuration and availability of NAS resources. Controller provided voice advisories are needed less frequently, thus improving efficiency.

Key Related Systems

Automatic Dependent Surveillance-Broadcast Avionics
Flight Object Management System - Terminal
General Weather Processor
Integrated Information Workstation - Build 1
Next Generation Traffic Flow Management
System Wide Information Management Spiral 2
Traffic Information Service-Flight Information Service Broadcast Server

Issues

The FIS-B service will be via the UAT data link only. The assumption is that the airlines will get NAS status, and weather data, via their FOCs as they do today. Only properly equipped aircraft will receive the FIS-B service.

Capability Traffic Advisory

Operational Improvement

Current Traffic Advisory (103201)

Traffic advisories alert aircraft to potential conflicts with other objects on the surface or in flight. For example, controllers transmit traffic advisories to aircraft or other flight objects that are in the proximity of hot air or gas balloons, missile launches, or other potential hazards. Traffic advisories for aircraft on the surface include the number, type, position, and intent of the ground traffic. Controllers provide the advisories to pilots via radio.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Air Route Surveillance Radar - Model 1E
Air Route Surveillance Radar - Model 2
Air Route Surveillance Radar - Model 3
Air Route Surveillance Radar-Model 4
Air Traffic Control Beacon Interrogator - Model 6
Air Traffic Control Beacon Interrogator-Model 4
Air Traffic Control Beacon Interrogator-Model 5
Airport Movement Area Safety System
Airport Surface Detection Equipment-Model 3
Airport Surveillance Radar - Model 9
Airport Surveillance Radar Model 11
Airport Surveillance Radar Model 8
Airport Surveillance Radar-Model 7
Beacon Interrogator, Military
Common Automated Radar Terminal System - Model IIE
Common Automated Radar Terminal System - Model IIIA
Common Automated Radar Terminal System - Model IIIE
Common Automated Radar Terminal System Software
Digital Airport Surveillance Radar
Digital Bright Radar Indicator Tower Equipment
Display System Replacement
Enhanced Terminal Voice Switch
Final Monitor Aid
Fixed Position Surveillance Model 20 Series
Fixed Position Surveillance-Model 117
Flight Data Input/Output
Full Digital Automated Radar Terminal System Display
High Frequency Communications
Integrated Communications Switching System Type I
Integrated Communications Switching System Type III
Microprocessor-En Route Automated Radar Tracking System
Mode Select
Mode Select Transponder
Next-Generation Air/Ground Communications System Cockpit Display Unit
Next-Generation Air/Ground Communications System Communication Management Unit
Precision Runway Monitor
Radar Automated Display System
Rapid Deployment Voice Switch Type I
Rapid Deployment Voice Switch Type II
Rapid Deployment Voice Switch Type IIA
Remote Maintenance Monitoring System
Standard Terminal Automation Replacement System
Traffic Alert and Collision Avoidance System
Traffic Information System Avionics
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios
Very High Frequency Airborne Radios
Very High Frequency Ground Radios
Very High Frequency/Ultra High Frequency Emergency Communications Transceivers - Terminal

Issues

none identified

Operational Improvement

Traffic Advisories using Digital Traffic Data (103206)

Pilots have an integrated cockpit display of traffic information (CDTI) for aircraft equipped with automatic dependent surveillance (ADS) and ground surveillance information. There is national availability of surrounding traffic information in the cockpit, including ADS - broadcast information and the rebroadcast of non-transmitting targets to aircraft.

Benefits

Safety is enhanced with improvement of the pilot's situational awareness through data link and display of real-time traffic information for the vicinity. With less need for controller-provided voice advisories, efficiency is improved. Broadcast and display of traffic information facilitate delegating separation responsibility to the pilot and potentially reducing separation standards, which would lead to increased capacity.

Key Related Systems

Air Route Surveillance Radar-Model 4
Airport Surface Detection Equipment Model 3/Airport Movement Area Safety System Upgrade
Airport Surveillance Radar - Model 9
Airport Surveillance Radar Model 11
Automatic Dependent Surveillance-Broadcast Avionics
Beacon Interrogator, Military
Beacon Interrogator, Military
Broadcast Services Ground Station
Cockpit Display of Traffic Information Avionics
Digital Airport Surveillance Radar
Flight Information Service - Data Link
Future Air Navigation System 1/A
Mode Select

Standard Terminal Automation Replacement System Technological Refresh
Surface Traffic Information Processor
Traffic Information Service-Flight Information Service Broadcast Server

Issues

Trades must be performed to determine how surveillance data will flow between GBT, SDN, SWIM (to get the flight data object), and the ADS-B/TIS-B Avionics.

Capability Weather Advisories Capability

Operational Improvement

Automatic Hazardous Weather Alert Notification (103117)

Common situational awareness between pilots and controllers is enhanced via immediate, simultaneous dissemination of hazardous weather to both NAS service providers and users via voice circuits and datalink.

Benefits

Automatic and immediate notification of hazardous weather (e.g., wind shear and microbursts alerts) enhances NAS safety.

Key Related Systems

Automatic Dependent Surveillance-Broadcast Avionics
Broadcast Services Ground Station
Cockpit Display of Traffic Information Avionics
Communications Management System
Low-Level Windshear Alert System - Relocation/Sustainment Tech Refresh
System Wide Information Management Spiral 3

Issues

Data link availability with ADS-B and appropriately equipped aircraft.

Operational Improvement

Current En Route Advisory - Weather (103107)

Weather advisories alert traffic managers and controllers of hazardous weather (e.g., hail, icing, turbulence, and high winds) associated with thunderstorm activity. National Weather Service (NWS) meteorologists at each Air Route Traffic Control Center's Center Weather Service Unit and the Aviation Weather Center in Kansas City, MO, generate these advisories based on weather data from NWS and FAA sensors. Data also comes from airborne jetliners that downlink wind and temperature data via a meteorological data collection and reporting system (MDCRS) run by a communications service provider. Pilot reports (PIREP) of encountered weather are another valuable source of weather data. En Route controllers provide weather advisories to pilots via radio. Pilots also receive warnings that are recorded and broadcast via radio at selected very high frequency omnidirectional range (VOR) sites.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Air Route Surveillance Radar - Model 3
Air Route Surveillance Radar-Model 4
Aircraft Weather Sensors
Commercial Communications Service Provider
Display System Replacement
Enhanced Traffic Management System
Flight Information Service - Data Link
National Weather Service Workstation
Next Generation Weather Radar
Operational and Supportability Implementation System
U.S. Notice to Airmen System
Weather Message Switching Center Replacement
Weather Message Switching Center Replacement (WMSCR) Sustain
Weather and Radar Processor Stage 3

Issues

none identified

Operational Improvement

Current Oceanic Advisory - Weather (103114)

Common situational awareness improves by providing location and intensity of thunderstorm activity over oceanic airspace to controllers, dispatchers, and pilots via alphanumeric messages.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Dynamic Ocean Tracking System
Future Air Navigation System 1/A
Operational and Supportability Implementation System
Weather and Radar Processor Stage 3

Issues

>> FAA funding of aviation weather R&D is absolutely essential to developing more accurate, higher-resolution oceanic weather products (detection and forecasts) for convection, turbulence, and in-flight icing. >> WARP interface to above systems provides cost-effective source (vice vendors) of weather products

Operational Improvement

Current Terminal Advisory - Weather (103101)

Terminal controllers receive textual and graphical weather information. They use this information to provide pilots weather advisories of potentially hazardous weather conditions, including wind shear and microburst alerts, precipitation intensity levels, icing, and areas of low visibility, hail, lightning, and tornadoes. Controllers also transmit these advisories to pilots via radio. Pilots also receive recorded warnings that are broadcast via radio at selected very high frequency omnidirectional range (VOR) sites and on Automated Terminal Information System (ATIS). In addition to the broadcast weather advisories, pilots receive automated wind shear alerts via the Terminal Weather

Information for Pilot (TWIP) system at NAS pacing airports.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Automated Surface Observing System
Automated Surface Observing System Controller Equipment - Information Display System
Commercial Communications Service Provider
Integrated Terminal Weather System
Low-Level Windshear Alert System - Relocation/Sustain
National Weather Service Workstation
Terminal Doppler Weather Radar
Terminal Weather Information for Pilots
Weather System Processor

Issues

* TWIP success is dependent on two factors: 1) AOCs forwarding the wind shear/microburst data to their aircraft, and 2) Ability to display (avionics) that wind shear/microburst information to flight deck personnel * Convective Weather Forecast capability must be implemented in IOC ITWS - the impact of thunderstorm activity at NAS pacing airports ripples throughout much of the NAS, hence traffic managers must know of constrained ops at pacing airports * ITWS wind shear/MB prediction is dependent on MDCRS data, however, participating airlines threatening to turn off the MDCRS datastream unless FAA & NWS pay some of their Comms costs * RUC model forecast data only available hourly if MDCRS received

Operational Improvement

Deploy FIS-B Nationally (103104)

Flight Information Services - Broadcast (FIS-B) currently enables pilots to receive text and graphical weather information via a vendor-provided service (including data link). Free access to basic weather and NAS status information are available to properly equipped aircraft. En route weather server (WARP/GWIS) will provide the FIS vendor with weather data in the future.

Benefits

Safety is enhanced, as the pilot has real-time access to data-linked weather information. Pilots need controller-provided voice weather advisories less frequently, which improves efficiency.

Key Related Systems

Aeronautical Information Management
Automatic Dependent Surveillance-Broadcast Avionics
Broadcast Services Ground Station
Cockpit Display of Traffic Information Avionics
Commercial Communications Service Provider
Integrated Terminal Weather System
National Weather Service Workstation
Surface Traffic Management System
System Wide Information Management Spiral 2
Weather and Radar Processor Replacement

Issues

1) Datalink via GBT, SWIM and the SMU are needed for this step. We will likely need interim interfaces between ITWS, WARP/GWIS, weather sensors, etc., and SWIM. 2) It is assumed that WARP/GWIS (and later GWP) will package the weather data that is sent to AIM via SWIM. Then AIM will package all FIS data (NAS Status and Weather Data) and transmit it via SWIM and GBT. 3) Agency policy vis-a-vis re provision of FIS services--FAA versus vendor--is not clear at this time and being revisited as earlier FAA policy established it to be vendor-provided service.

Operational Improvement

Integrated En Route Weather Products (103109)

Several systems and initiatives lead to improved weather products in the En Route domain, including the tri-agency Next Generation Weather Radar system, Meteorological Data Collection and Reporting System (MDCRS), Corridor Integrated Weather System (CIWS), and the Weather and Radar Processor (WARP) (and its successor--the Global Weather Information System). More jetliners become MDCRS equipped and humidity and turbulence reports added to that of winds and temperature, improving weather model forecast output. CIWS provides tailored thunderstorm products for traffic managers to mitigate thunderstorm impacts on the busy corridor from Chicago eastward, and also enhanced Echo Top mosaic and forecast, to facilitate over-the-top routing. The Global Weather Information System (GWIS) replaces the WARP and provides enhanced forecasting tools for the CWSU.

Benefits

Improved weather products increase the predictability of weather; this improves safety- and efficiency-related decisions. The improved weather predictions increase access to non-impacted airspace and minimize re-routing around hazardous weather, saving fuel and time.

Key Related Systems

Aeronautical Information Management
Air Route Surveillance Radar-Model 4
Automated Surface Observing System Pre-Planned Product Improvement
Commercial Communications Service Provider
Corridor Integrated Weather System
Enhanced Aircraft Weather Sensor
Flight Information Service - Data Link
Integrated Terminal Weather System
National Weather Service Workstation
Next Generation Weather Radar Open System
Operational and Supportability Implementation System
Weather Message Switching Center Replacement (WMSCR) Sustain
Weather and Radar Processor Stage 3

Issues

The World Meteorological Organization has implemented a new weather message communication format (GRIB2), which will be used on

both Model data and MDCRS data. Currently, all NAS systems use GRIB1 format. By the mandatory date (TBD), there will be a switch to GRIB2, and the following systems must have had a minor software update: WARP/GWIS, CIWS, OASIS, ETMS, CTAS subsystems, URET Core Capability Limited Development (CCLD), OASIS, and ITWS.

Operational Improvement

Integrated Terminal Weather Products (103113)

Several systems and initiatives lead to improved ATC Advisory - Weather services in the terminal domain including the Automated Surface Observing System (ASOS) Ice-free Wind sensor, the ASOS Enhanced Precip ID sensor, and Weather Support to Ground Deicing Decision Making (WSDDM). Other terminal-area products and systems include wake vortex mitigation, ASOS Snow Depth sensor, ASOS 25-Kft Ceilometer, Integrated Terminal Weather System (ITWS) deployment, tech refresh for Airport Surveillance Radar-9 (Weather Systems Processor) and Terminal Doppler Weather Radar, and improved prediction of fog/low ceilings (safety and capacity).

Benefits

Improved weather products increase the predictability of weather, which aids both safety and efficiency-related decisions. More accurate weather predictions not only help avoid weather-constrained approach/departure corridors, but also increase access to non-impacted runways as well.

Key Related Systems

Aeronautical Information Management
Airport Surveillance Radar-Model 9 and Mode Select SLEP
Automated Surface Observing System Pre-Planned Product Improvement
Automatic Dependent Surveillance-Broadcast Avionics
Broadcast Services Ground Station
Cockpit Display of Traffic Information Avionics
Commercial Communications Service Provider
Communications Management System
Corridor Integrated Weather System
Flight Information Service - Data Link
Integrated Terminal Weather System
Integrated Terminal Weather System P3I/Tech Refresh
Low-Level Windshear Alert System - Relocation/Sustain
National Weather Service Workstation
Next Generation Weather Radar Open System
Operational and Supportability Implementation System
Stand Alone Weather Sensor
Standard Terminal Automation Replacement System
Surface Traffic Management System
System Wide Information Management Spiral 1
System Wide Information Management Spiral 2
Terminal Doppler Weather Radar - Technical Refresh
Terminal Doppler Weather Radar Service Life Extension Program
Weather Message Switching Center Replacement (WMSCR) Sustain
Weather System Processor
Weather Systems Processor (Technological Refresh)
Weather and Radar Processor Replacement

Issues

1. Expedite fielding of ITWS with CWF (convective weather forecast) capability--it has demonstrated the ability to save airlines big $$ (via delay benefits) during thunderstorm & snow events in NY area. (Note: yet ATB says Medium-Intensity Airport Weather System (MIAWS) is highest ranked system (via Expert Choice) above that of ITWS and STARS!!) 2. FIS success (benefits) dependent on aircraft equipage 3. WSDDM needs FAA implementation at snow-susceptible,ITWS airports 4. WV sensor requires cost-benefit analysis prior to implementation

Operational Improvement

On-Demand Oceanic Weather Products (103115)

Various products tailored for transoceanic flights, such as convection, volcanic ash, in-flight icing, clear air turbulence, and convection-induced turbulence, emerge from FAA-sponsored research and development. Better data link technology using ground- and satellite-based dissemination architectures speeds delivery, which enables common situation awareness (by oceanic control, airline operation center, (AOC) dispatcher, and flight deck) of the hazard along the flight path transition areas.

Benefits

Improved weather products increase predictability of weather, which improves safety- and efficiency-related decisions. The improved weather predictions increase access to non-impacted airspace.

Key Related Systems

Aeronautical Information Management
Dynamic Ocean Tracking System
Future Air Navigation System 1/A
Operational and Supportability Implementation System
Weather and Radar Processor Replacement

Issues

· Reliance on NOAA (NESDIS and NWS) for volcanic ash product · There are a few SWIM/data link requirements allocated to this step (27, 671, 701) that should probably be allocated to 103115 which deals with data link and common weather picture.

Operational Improvement

Support CDM with Simultaneous Hazardous Weather Notification (103112)

Common situational awareness improves through similar depiction of NAS-impacting weather to pilots, controllers, and traffic managers as SWIM facilitates near simultaneous dissemination of aviation-impacting weather to both service providers and users.

Benefits

Since controllers and pilots have a common weather picture, safety is enhanced. Distributing a common weather picture to ATC personnel and pilots supports the Collaborative Decision Making process and delegating separation responsibility to the pilot.

Key Related Systems
Aeronautical Information Management
Air Route Surveillance Radar-Model 4
Airport Surveillance Radar-Model 9 and Mode Select SLEP
Automated Surface Observing System Pre-Planned Product Improvement
Automatic Dependent Surveillance-Broadcast Avionics
Broadcast Services Ground Station
Cockpit Display of Traffic Information Avionics
Commercial Communications Service Provider
Common Automated Radar Terminal System - Model IIIE
Corridor Integrated Weather System
Enhanced Aircraft Weather Sensor
Flight Information Service - Data Link
Integrated Terminal Weather System
National Weather Service Workstation
Next Generation Weather Radar Open System
Operational and Supportability Implementation System
Stand Alone Weather Sensor
System Wide Information Management Spiral 2
Terminal Doppler Weather Radar - Technical Refresh
Terminal Doppler Weather Radar Service Life Extension Program
Traffic Information Service-Flight Information Service Broadcast Server
Weather Message Switching Center Replacement (WMSCR) Sustain
Weather Systems Processor (Technological Refresh)
Weather and Radar Processor Replacement
Weather and Radar Processor Stage 3

Issues
Currently, WMSCR is undergoing a Tech Refresh to enable it to function through 2010/11. SWIM must subsume its functionality by then. From a SWIM perspective, what physically will be in place to subsume WMSCR functionality?

Operational Improvement

Turbulence and Icing Available on Meteorological Data Collection and Reporting System (MDCRS) (103116)

Additional atmospheric parameters (i.e., humidity and turbulence) become available from expanded airline fleet participation. That coupled with additional parameters further improves the accuracy of weather forecast model output such as inflight icing and turbulence forecasts.

Benefits
More accurate in-flight icing forecasts increase safety.

Key Related Systems
Enhanced Aircraft Weather Sensor

Issues
Airline equipage of their fleet during economic slump.

Service ATC-Separation Assurance

Capability Aircraft Airspace Capability

Operational Improvement

Manage Aircraft in Dynamic Airspace (102302)

The value of the nation's airspace for all users becomes increasingly critical as military operations, domestic commercial operations, general aviation, and, finally, space transportation vie for airspace. Airspace use/availability information is dynamic for both users and service providers; it allows them to react to available airspace to enhance flight operations for both mission and economic priorities. Automated systems provide users of properly equipped aircraft streaming information that include, for example, air traffic control clearance, current and forecast weather, notices to airmen, hazardous weather, airspace-related charts, and status of special use airspace (SUA). Airspace is designated for special use for all aviation users based on priority and availability of use. Information on SUA is widely available and highly dynamic as far as start and end times of the defined SUAs

Benefits
The benefits of this operational improvement include: Increased productivity by providing the procedures and tools to allow service-provider volume to be adjusted to changes in flow without impacting the workload associated with separation assurance. Improved the overall average flight efficiency by assigning volumes and setting reservation of special use airspace based on the expected flow for the day without impacting the workload associated with separation assurance. Increased flight efficiency by supporting the service provider in detecting dynamic airspace intersections and developing efficient resolutions

Key Related Systems
Aeronautical Information Management
Air Route Surveillance Radar-Model 4
Broadcast Services Ground Station
Common Automation Platform - Work Package 1
Common Display Subsystem - Remote Phase 1
Common Display Subsystem Phase 1
Communications Management System
En Route Automation Modernization
Flight Object Management System - Terminal
NAS Voice Switch
Surveillance Data Network
System Wide Information Management Spiral 2
Voice Switching and Control System Modification (Technological Refresh)

Issues

This functionality and associated procedures in separation assurance are needed if the benefits of the improvements to Airspace Management in dynamic resectorization and flexible SUA management are to be achieved. This functionality and associated procedures

are also needed to fully exploit the benefits for the enhancements to flight data management.

Operational Improvement

Current Aircraft To Airspace Separation (102301)

Separation services ensure that aircraft maintain a safe distance from special use airspace (SUA), such as prohibited, restricted, and warning areas. SUA ensures safety for unique aircraft operations or prohibits flight within a specified area. Separation standards ensure that aircraft remain an appropriate minimum distance from the airspace. The standards are applied using such vehicles as regulatory publications and specific control instructions.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Air Route Surveillance Radar - Model 1E
Air Route Surveillance Radar - Model 2
Air Route Surveillance Radar - Model 3
Air Route Surveillance Radar-Model 4
Air Traffic Control Beacon Interrogator - Model 6
Air Traffic Control Beacon Interrogator-Model 4
Air Traffic Control Beacon Interrogator-Model 5
Airport Surveillance Radar - Model 9
Airport Surveillance Radar Model 11
Airport Surveillance Radar Model 8
Airport Surveillance Radar, Military
Airport Surveillance Radar-Model 7
Automated Radar Terminal System Color Display
Common Automated Radar Terminal System - Model IIE
Common Automated Radar Terminal System - Model IIIA
Common Automated Radar Terminal System - Model IIIE
Digital Airport Surveillance Radar
Digital Voice Recorder System
Display System Replacement
Enhanced Terminal Voice Switch
Full Digital Automated Radar Terminal System Display
Heating, Ventilation and Air Conditioning-Long-Range Radar
Host Computer System/Oceanic Computer System Replacement
Integrated Communications Switching System Type I
Integrated Communications Switching System Type II
Low-Density Radio Communications Link
Microprocessor-En Route Automated Radar Tracking System
Multi-Mode Digital Radios
Power System - Long-Range Radar
Radar Automated Display System
Radio Control Equipment
Rapid Deployment Voice Switch Type I
Rapid Deployment Voice Switch Type II
Rapid Deployment Voice Switch Type IIA
Remote Automated Radar Terminal System Color Display
Small Tower Voice Switch
Standard Terminal Automation Replacement System
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios
Ultra High Frequency Ground Radios - Replacement
Very High Frequency Airborne Radios
Very High Frequency Ground Radios
Voice Switching and Control System Modification (Control Subsystem Upgrade)

Issues

none identified

Capability Aircraft to Aircraft Separation Capability

Operational Improvement

Current En Route Separation (102112)

Aircraft to aircraft separation services in en route airspace ensure a safe distance is maintained between aircraft. Air traffic controllers apply separation standards defined for the different aircraft operating environments to guide pilots flying under instrument or visual flight rules. They separate aircraft under their control using standard rules for vertical, lateral, longitudinal, or visual separation. When potential conflicts exist, an air traffic controller evaluates the situation, develops conflict resolution alternatives, and alerts or issues separation instructions to the aircraft.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Air Route Surveillance Radar - Model 1E
Air Route Surveillance Radar - Model 2
Air Route Surveillance Radar - Model 3
Air Route Surveillance Radar-Model 4
Air Traffic Control Beacon Interrogator - Model 6
Air Traffic Control Beacon Interrogator-Model 4
Air Traffic Control Beacon Interrogator-Model 5

Alaskan National Airspace System Interfacility Communications System
Digital Voice Recorder System
Display System Replacement
Heating, Ventilation and Air Conditioning-Long-Range Radar
High Frequency Airborne Radios
High Frequency Communications
Low-Density Radio Communications Link
Microprocessor-En Route Automated Radar Tracking System
Multi-Mode Digital Radios
Power System - Long-Range Radar
Power Systems
Radio Communication Link
Radio Control Equipment
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios - Replacement
Very High Frequency Airborne Radios
Very High Frequency Ground Radios
Voice Switching and Control System Modification (Control Subsystem Upgrade)
Voice Switching and Control System Modification (Technological Refresh)

Issues

none identified

Operational Improvement

Current Oceanic Separation (102105)

Aircraft to aircraft separation services in oceanic airspace ensure a safe distance is maintained between aircraft. Separation minima are based on the oceanic separation and procedures of the International Civil Aviation Organization. These services are supported by a system providing flight data processing, conflict probe, and situation display for oceanic air traffic control. Separation is supported through daily development and publishing of ocean track systems. Assignment to tracks, entry times, etc., through clearance planning, provides separation along and between tracks.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Advanced Technologies and Oceanic Procedures
Advanced Technologies and Oceanic Procedures Controller Work Station
Air Route Surveillance Radar - Model 1E
Air Route Surveillance Radar - Model 2
Air Route Surveillance Radar - Model 3
Air Route Surveillance Radar-Model 4
Air Traffic Control Beacon Interrogator - Model 6
Digital Voice Recorder System
Dynamic Ocean Tracking System
Future Air Navigation System 1/A
Heating, Ventilation and Air Conditioning-Long-Range Radar
High Frequency Airborne Radios
High Frequency Communications
Host Computer System/Oceanic Computer System Replacement
Low-Density Radio Communications Link
Microprocessor-En Route Automated Radar Tracking System
Multi-Mode Digital Radios
Multi-Sector Oceanic Data Link
Power System - Long-Range Radar
Radio Communication Link
Radio Control Equipment
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios
Ultra High Frequency Ground Radios - Replacement
Very High Frequency Airborne Radios
Very High Frequency Ground Radios
Voice Switching and Control System Modification (Control Subsystem Upgrade)
Voice Switching and Control System Modification (Technological Refresh)

Issues

none identified

Operational Improvement

Current Terminal Separation (102129)

Aircraft to aircraft separation services in terminal airspace ensure a safe distance is maintained between aircraft. Within terminal airspace, requirements for separation vary by airspace Class. Controllers separate aircraft under their control using standard rules for vertical, lateral, longitudinal, or visual separation methods. When potential conflicts exist, an air traffic controller evaluates the situation, develops conflict resolution alternatives, and alerts or issues separation instructions to the aircraft

Benefits

Current operations are provided in the NAS.

Key Related Systems

Air Traffic Control Beacon Interrogator - Model 6
Air Traffic Control Beacon Interrogator-Model 4
Air Traffic Control Beacon Interrogator-Model 5

Airport Surveillance Radar - Model 9
Airport Surveillance Radar Model 11
Airport Surveillance Radar Model 8
Airport Surveillance Radar, Military
Airport Surveillance Radar-Model 7
Alaskan National Airspace System Interfacility Communications System
Automated Radar Terminal System Color Display
Common Automated Radar Terminal System - Model IIIA
Common Automated Radar Terminal System - Model IIIE
Digital Airport Surveillance Radar
Digital Voice Recorder System
Enhanced Terminal Voice Switch
Flight Data Input/Output
Full Digital Automated Radar Terminal System Display
High Frequency Airborne Radios
Integrated Communications Switching System Type I
Low-Density Radio Communications Link
Microprocessor-En Route Automated Radar Tracking System
Mode Select
Multi-Mode Digital Radios
Radar Automated Display System
Radio Communication Link
Radio Control Equipment
Rapid Deployment Voice Switch Type I
Rapid Deployment Voice Switch Type II
Remote Automated Radar Terminal System Color Display
Small Tower Voice Switch
Standard Terminal Automation Replacement System
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios
Ultra High Frequency Ground Radios - Replacement
Very High Frequency Airborne Radios
Very High Frequency Ground Radios

Issues

none identified

Operational Improvement

Evolve Oceanic Procedures to Domestic En Route Separation (102136)

Implementing enhanced communication navigation systems (CNS) and avionics capabilities results in oceanic separation standard minima and procedures becoming more like domestic en route operations and procedures. Improved oceanic automation (satellite, aircraft, surface) enables controllers to apply reduced vertical, longitudinal, and lateral separation standards.

Benefits

E-ATOP surveillance capabilities combined with direct controller-pilot communications via voice or data link enable controllers to detect, intervene, and mitigate the risk of conflict with other aircraft when an aircraft deviates from the clearance. Oceanic separation standards mirror domestic en route separation standards. Flight operators are able to individually tailor requested flight profiles to meet their business objectives.

Key Related Systems

Aeronautical Information Management
Common Automation Platform - Work Package 1
Common Display Subsystem Phase 1
Integrated Information Workstation - Build 1
NAS Voice Switch
Surveillance Data Network
Voice Switching and Control System Modification (Technological Refresh)

Issues

Identifying the demand point at which the service in a track structure costs more in the terms of efficiency than the institution of increased surveillance, communication to mange the flow with radar-like procedures. Need to develop a concept of control that does not depend on the same domestic volumetric assignments or the cost of radar-like services will outweigh the flight efficacy benefits of flexibility.

Operational Improvement

Extend The Use Of Radar Separation Procedures To Non-Radar Airspace Using Alternative Sources Of Surveillance (102123)

Integrating surveillance sources (primary, beacon, automatic dependent surveillance (ADS)) provides expanded separation services throughout the NAS. Increasing the separation assurance coverage area is based on the aircraft transmission of position, velocity, and intent information. Additional non-radar surveillance sources (ADS) for position data, increased aircraft equipage, and enhanced automation allow reduced separation criteria to be applied in more areas of the NAS.

Benefits

Additional surveillance sources that extend coverage into previously non radar areas enhance safety by allowing controllers to provide radar-like separation services. Increased surveillance coverage allows controllers to eliminate non radar separation standards, permitting greater access to the NAS and increasing capacity. This operational improvement: Reduces the workload associated with maintaining aircraft position and separation procedurally, thus increasing the number of aircraft that can be worked by the controller. Reduces the separation requirement between equipped aircraft, thus permitting more aircraft into the volume airspace, which increases access and reduces flight inefficiency awaiting entry. Increases use of point-to-point clearances, which provides more efficient flight profiles.

Key Related Systems

Automatic Dependent Surveillance-Broadcast Avionics
Broadcast Services Ground Station

Common Automation Platform - Work Package 1
Common Display Subsystem Phase 1
Enhanced Terminal Voice Switch
NAS Voice Switch
Surveillance Data Network
System Wide Information Management Spiral 2
Voice Switching and Control System Modification (Technological Refresh)

Issues

Equipage and the mix of procedural versus radar-like targets at the same altitudes and routings. Equity and policy on servicing equipped versus non-equipped to improve/ maximize flow and access.

Operational Improvement

Oceanic Pairwise Maneuvers And Flexible Entry Points (102108)

Improved oceanic surveillance information, satellite-based communications, and data link provide the opportunity to reduce longitudinal and lateral spacing for aircraft to aircraft separation in oceanic airspace. Improved automation increases the separation assurance coverage area in the oceanic domain based on aircraft transmission of position, velocity, and intent information. Technology improvements support multiple entry points into the oceanic tracks relieving congestion at established gateways.

Benefits

Within the tracks, aircraft will be able to move to and fill the most advantageous flight positions with the climb/descend and pass maneuvers. Flexible entries into the tracks will allow the aircraft to fly minimum time/fuel path from gate to gate and not just within the track system.

Key Related Systems

Advanced Technologies and Oceanic Procedures
Advanced Technologies and Oceanic Procedures Controller Work Station
Automatic Dependent Surveillance-Addressable Avionics
Future Air Navigation System 1/A
NAS Voice Switch
Voice Switching and Control System Modification (Technological Refresh)

Issues

Need to link the flight planning functions of domestic automation and ATOP to accurately project the trajectory to the entry point. Need to link the Traffic Synchronization with ocean control so that the aircraft can be managed to ocean transition and entry with minimal impact on flow while meeting the flight objectives of the oceanic flight.

Operational Improvement

Reduce Horizontal Separation Standards -3 Miles (102117)

Multiple surveillance sources (primary, beacon, and automatic dependent surveillance) and improved surveillance data processing provide accurate position, trajectory, and intent data for aircraft to aircraft separation. Integrating these sources and providing terminal area surveillance data to the en route center increases the surveillance coverage area and availability of 3-mile separation procedures throughout the NAS.

Benefits

Increased surveillance coverage permits greater access to the NAS, enhances safety, and provides controllers the capability to use 3-mile separation minima throughout the NAS. The reduced separation standard also increases capacity.

Key Related Systems

Automatic Dependent Surveillance-Broadcast Avionics
Broadcast Services Ground Station
Display System Replacement
Display System Replacement Console Reconfiguration Monitor Replacement
Enhanced Terminal Voice Switch
Voice Switching and Control System Modification (Control Subsystem Upgrade)
Voice Switching and Control System Modification (Technological Refresh)

Issues

Need to develop and validate a concept of use for surveillance data fusion and its use in separation assurance. Need to consider HMI to support effective use of three-mile procedures including a more rapid update rate for enroute displays. Strategy to exploit the use of ADS-B provided positions with increased accuracy in a transition to or in airspace without the full three mile RSP coverage.

Operational Improvement

Shared Responsibility For Horizontal Separation (102118)

Improved avionics and new procedures allow air traffic controllers to delegate resolution responsibility to pilots when it is operationally beneficial to do so. Enhancements to automatic dependent surveillance and the traffic information system provide common situational awareness to the flight deck display. Pilots implement the airborne separation assurance service by using visual flight rule-like procedures between like-equipped aircraft to realize an operational advantage.

Benefits

Delegating resolution authority for horizontal separation to pilots allows controllers to provide services to additional aircraft and increases the throughput for their sector. There is reduced controller workload through one-step clearances for conflict resolution or merging into flows. There is increased flight efficiency by ensuring minimal deviations to achieve/maintain separation.

Key Related Systems

Automatic Dependent Surveillance-Broadcast Avionics
Broadcast Services Ground Station
Cockpit Display of Traffic Information Avionics
Common Automation Platform - Work Package 1
Display System Replacement - D-position Technical Refresh
Display System Replacement - R-position Technical Refresh
Enhanced Terminal Voice Switch
NAS Voice Switch
Surveillance Data Network

System Wide Information Management Spiral 2
Traffic Information Service-Flight Information Service Broadcast Server
Voice Switching and Control System Modification (Technological Refresh)

Issues

Need concept of use for pilot maintenance of distance with a CDTI thus extending the oceanic procedures into an environment with smaller separation and less structured traffic. Need to evaluate the procedures to determine if the workload associated with monitoring is less than the current resolution merging procedures – does workload reduce or shift from one task to another

Operational Improvement

Use Aircraft Provided Intent Data to Improve Conflict Resolution (102122)

Integrating surveillance sources (primary, beacon, automatic dependent surveillance) provides pilots expanded separation services throughout the NAS. Air traffic controllers equipped with aircraft position broadcast reports via automatic dependent surveillance receive velocity and intent data as well as position information. The addition of aircraft intent data enables the controller to apply reduced separation minima in more areas of the NAS. Full collaborative decision making (CDM) capabilities and integrated decision support systems (DSSs) increase access to the NAS for equipped users, resulting in some exclusionary airspace.

Benefits

Safety is enhanced through improved predictability by adding more accurate intent data from integrated surveillance sources. Improved intent data provides controllers more flexibility in approving user-requested routings, which will also contribute to increasing capacity. Incorporating intent data: Reduces the workload associated with conflict resolution development and monitoring, since the more accurate future trajectories reduce the number of potential conflicts identified, thus potentially increasing productivity/capacity. Reduces the monitoring and resolution workload by providing data to the Decision Support Tool to support continued monitoring of potential conflicts and responding only to those that persist in time. Improves the average flight efficiency, since fewer aircraft are moved proactively based on the potential of conflict.

Key Related Systems

Automatic Dependent Surveillance-Broadcast Avionics
Broadcast Services Ground Station
Common Display Subsystem Phase 1
NAS Voice Switch
System Wide Information Management Spiral 2
Voice Switching and Control System Modification (Technological Refresh)

Issues

Need to develop a concept of use for and evaluate/validate the role of automation in conformance monitoring. Need to evaluate/validate the improvements in trajectory prediction that intent provides at the normal conflict detection prediction window. How much more accurate are the trajectories at 20, 15, 10 , 5 minutes?

Operational Improvement

Use Data Messaging to Reduce Workload And Increase Flight Efficiency (102114)

Enhanced automation and aircraft equipage promote expanded use of data link for additional routine communications between controllers and pilots. Data link usage is also reducing frequency congestion. Using data link, controllers and pilots exchange routine, non-time critical messages, such as transfer of control, more efficiently and accurately.

Benefits

Increased communications accuracy enhances safety with decreased operational errors and improved predictability of flight trajectories. Using data link reduces frequency congestion and provides more timely and efficient delivery of clearances, resulting in increased flight efficiency with less time and fewer miles flown per sector. Reduced voice communications also allows miles-in-trail restrictions to be relaxed, which increases airspace capacity with fewer delays and increased sector-traffic throughput.

Key Related Systems

Common Display Subsystem Phase 1
Communications Management System
NAS Voice Switch
System Wide Information Management Spiral 2
Voice Switching and Control System Modification (Technological Refresh)

Issues

Need to consider the roles and responsibilities in separation assurance versus strategic flow when voice is not required to change trajectories. Not applicable Need to consider the role of TMU for strategic adjustments and the role separation assurance and clearances. Need to develop a concept of use for data messaging that includes its role in separation assurance as well as/differentiating from delivery of other ATM services.

Capability Aircraft-Terrain-Obstacles

Operational Improvement

Current Aircraft To Terrain / Obstacle Separation (102201)

Separation services ensure that aircraft maintain a safe distance from terrain and obstacles. Aircraft positions are derived from navigational systems, surveillance information, visual orientation, and position reports to ensure that an aircraft's trajectory remains a minimum safe distance from terrain and obstacles.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Air Route Surveillance Radar - Model 1E
Air Route Surveillance Radar - Model 2
Air Route Surveillance Radar - Model 3
Air Route Surveillance Radar-Model 4
Air Traffic Control Beacon Interrogator - Model 6
Air Traffic Control Beacon Interrogator-Model 4
Air Traffic Control Beacon Interrogator-Model 5
Airport Surface Detection Equipment-Model 3
Airport Surveillance Radar - Model 9

Airport Surveillance Radar Model 11
Airport Surveillance Radar Model 8
Airport Surveillance Radar, Military
Airport Surveillance Radar-Model 7
Automated Radar Terminal System Color Display
Common Automated Radar Terminal System - Model IIE
Common Automated Radar Terminal System - Model IIIA
Common Automated Radar Terminal System - Model IIIE
Digital Airport Surveillance Radar
Digital Voice Recorder System
Display System Replacement
Enhanced Terminal Voice Switch
Full Digital Automated Radar Terminal System Display
Heating, Ventilation and Air Conditioning-Long-Range Radar
High Frequency Airborne Radios
Integrated Communications Switching System Type I
Integrated Communications Switching System Type II
Low-Density Radio Communications Link
Microprocessor-En Route Automated Radar Tracking System
Mode 3/AC Transponder
Mode Select
Mode Select Transponder
Multi-Mode Digital Radios
Power System - Long-Range Radar
Radar Automated Display System
Radio Communication Link
Radio Control Equipment
Rapid Deployment Voice Switch Type I
Rapid Deployment Voice Switch Type II
Rapid Deployment Voice Switch Type IIA
Remote Automated Radar Terminal System Color Display
Small Tower Voice Switch
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios
Ultra High Frequency Ground Radios - Replacement
Very High Frequency Airborne Radios
Very High Frequency Ground Radios
Voice Switching and Control System Modification (Control Subsystem Upgrade)
Voice Switching and Control System Modification (Technological Refresh)

Issues

none identified

Operational Improvement

Use Improved Terrain Information To Share Responsibility For Aircraft To Terrain Separation (102203)

Flight Crews and single-pilot operations monitor cockpit information that provides increased situational awareness of position, altitude, weather, and other essential data that contribute to safety. Automated systems consolidate essential and timely information that is valuable to the pilot. Pilots receive comprehensive databases that reflect terrain and obstacles, fixed and temporary, to provide continuous updates, rather than the 28-day updates in the current architecture. Satellite position reports show the aircrafts actual position on moving maps in the cockpit to provide pilots a more complete picture of the aircraft-to-ground environment to reduce controlled flight into terrain.

Benefits

Since the flight deck can accurately monitor the relationship of the aircraft to the terrain, the service provider can issue clearances for more direct routings in which the flight deck is responsible for maintaining clearance from terrain along the path. This allows greater flight efficiency in the route of flight for the pilot (time and fuel), while the controller can issue direct clearances versus multiple navigational aid fix/intersection clearances. The pilot benefits through increased situational awareness (location and altitude) and operating efficiency while the service provider reduces workload, since the aircraft routing is more direct and the aircraft requires less monitoring.

Key Related Systems

Aeronautical Information Management
Automatic Dependent Surveillance-Broadcast Avionics
Broadcast Services Ground Station
Cockpit Display of Traffic Information Avionics
Common Automation Platform - Work Package 1
Common Display Subsystem Phase 1
NAS Voice Switch
Surveillance Data Network
System Wide Information Management Spiral 2
Voice Switching and Control System Modification (Technological Refresh)

Issues

Need to develop a concept of use for clearances that require an aircraft maintain a true altitude above the terrain versus standard baro-altitude clearances? Need to consider what is required for the controller to issue the clearance- pilot request, designation of capability on the flight plan, etc. Need to evaluate the procedures to see determine if the workload associated with monitoring is less than the current resolution merging procedures - does workload reduce or shift from one task to another. Need to determine if direct routing based on aircraft equipage will impact minimum safe altitudes to reflect more of a airway safe altitude used today on published airway structures.

Capability Surface Separation Capability

Operational Improvement

Current Surface Separation (102401)

Separation services on the airport surface prevent taxi conflicts and runway incursions. Separation is based on radio communication, visual acquisition, notes, and monitoring to ensure that taxi clearances do not result in conflicts and to conduct conformance monitoring. At some airports, the airport surface detection equipment radar and the associated display provide increased situational awareness.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Digital Voice Recorder System
Enhanced Terminal Voice Switch
Flight Data Input/Output
Integrated Communications Switching System Type I
Multi-Mode Digital Radios
Radar Automated Display System
Radio Control Equipment
Rapid Deployment Voice Switch Type I
Rapid Deployment Voice Switch Type II
Rapid Deployment Voice Switch Type IIA
Small Tower Voice Switch
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios
Ultra High Frequency Ground Radios - Replacement
Very High Frequency Airborne Radios
Very High Frequency Ground Radios

Issues

none identified

Operational Improvement

Improve Pilot Separation Assurance Functions on the Surface by Providing Targets for On-Board Displays (102408)

Automated systems provide pilots the target definition and information previously provided to controllers. Both pilots and controllers viewing high-definition target location, identification, and speed greatly enhance situational awareness for all parties. The increase in and fidelity of information provided to pilots enhance and enrich the operational moving environment of the airport surface. Automated systems display and advise the pilot of the location of vehicles and other aircraft. Automated broadcast of aircraft and vehicle position to ground sensors/receivers provides a comprehensive digital display of the runway and taxi environment. Decision support system algorithms enhance target displays, and the displays support identifying and alerting pilots that may enter into a runway incursion environment. Civil as well as commercial users utilize multifunction flight deck displays to enhance traffic situational awareness of all current traffic at the airport. Air Traffic provides air traffic management services to aircraft equipped with capability to simulate visual meteorological conditions.

Benefits

There is common situational awareness for the service provider and the pilot. Providing targets on the onboard display allows pilots to better manage their assigned separation function in executing taxi-clearances. By better understanding the surrounding traffic and runway and taxi environment, the pilot can execute clearance safely and efficiently in planning aircrafts movements to meet crossing and merging requirements along taxiways. The larger picture allows the pilot to □spool up□ engines just in time by anticipating controller clearance delivery.

Providing the full air-ground picture to the pilot increases safety. Potential controller clearance errors can be mitigated because the pilots can see the consequence more clearly. This increases the pilot□s effectiveness as the second set of eyes.

Key Related Systems

Broadcast Services Ground Station
Common Automation Platform - Work Package 1
Common Display Subsystem - Remote Phase 1
Common Display Subsystem Phase 1
Communications Management System
Flight Object Management System - Terminal
NAS Voice Switch
Surveillance Data Network

Issues

Need sufficient equipage of ADS-Bwith CDTI or CDTI and TIS-B. Need clear concept of use for CDTI and ADS-B/TIS-

Operational Improvement

Provide Enhanced Aircraft Target Data to Service Providers for Surface Movement and Runway Separation (102406)

Smaller general aviation aircraft, as well as commercial aircraft, are identified and tracked on the runway surface to provide a full, comprehensive picture of the surface environment to the controller. Automated systems display and advise the controller of the location of vehicles and aircraft. Automated broadcast of aircraft and vehicle position to ground sensors/receivers provides a comprehensive digital display of the runway and taxi environment. This complements visual observation when poor visibility or distance impairs the controllers surveillance of the airport surface. Decision support system algorithms enhance target displays, and the displays support identifying and alerting aircraft and vehicles that may enter into a runway incursion environment. Target displays and decision support systems provide high-fidelity runway incursion alerts to controllers.

Benefits

Providing digital vehicle and aircraft targets with alerting logic and flashing tags for aircraft improves the service provider's ability to respond to potential incursions with greater efficiency and reduced workload.

Key Related Systems

Airport Surface Detection Equipment Model X
Common Automation Platform - Work Package 1
Common Display Subsystem - Remote Phase 1
NAS Voice Switch
Surveillance Data Network

Issues

Need a concept of use for positions with tags as support for situational awareness (traffic advisory) versus separation. There is the potential for the service provider to developing dependencies on the displayed information in support separation functions. When does situational awareness become separation support?

Operational Improvement

Provide Enhanced Surface Target Displays to Service Provider for Surface Movement and Runway Separation (102405)

The increase in and fidelity of information provided to tower controllers enhance and enrich the operational moving environment of the airport surface. Automated systems display and advise the controller of the location of vehicles and aircraft. Automated broadcast of aircraft and vehicle position to ground sensors/receivers provides a comprehensive digital display of the runway and taxi environment. This complements visual observation when poor visibility or distance impairs the controllers surveillance of the airport surface. Decision support system algorithms enhance target displays, and the displays support identifying and alerting aircraft and vehicles that may enter into a runway incursion environment. Target displays and decision support systems provide high-fidelity runway incursion alerts to controllers.

Benefits

The benefits include: Increased safety through earlier detection of deviations that may lead to incursions. Reduced workload for service providers by providing automatic conformance monitoring of taxi clearances, thus potentially increasing individual productivity.

Key Related Systems

Broadcast Services Ground Station
Common Automation Platform - Work Package 1
Common Display Subsystem - Remote Phase 1
Common Display Subsystem Phase 1
Communications Management System
Flight Object Management System - Terminal
NAS Voice Switch
Next Generation Traffic Flow Management
Surveillance Data Network

Issues

Need to develop a concept of use for DSS to support development and delivery of taxi-clearances. The tie to traffic synchronization and the potential need to included digital delivery via datalink to make the concept operational advantageous. Certification and policy issues related to conformance monitoring by DSS – changes in roles and service provider behavior.

Operational Improvement

Provide Surface Situation to Pilots and Service Providers and Vehicle Operators for All-weather Surface Operations (102409)

As target displays improve and information is enriched regarding the movement areas, automation provides the enhanced controller tools to manage airport surface traffic. The decision support system (DSS) provides for dynamic planning of surface movements to include automated event trigger information that records time-over-spot. Air traffic controllers receive DSS-enhanced aircraft and vehicle-speed information to provide intent and performance monitoring to further facilitate alerting aircraft of runway incursions and overall safety of the airport movement area. The information-rich airport surface environment includes nearby airspace with the same fidelity to complete the movement picture of arriving and departing aircraft and the airport surface. The service provider furnishes traffic management services to aircraft equipped with capability to simulate visual meteorological conditions so that they can maneuver on the surface during low-visibility and zero-visibility operations.

Benefits

There is common situational awareness of all operators on the surface. Maintenance of near VMC-throughput in low visibility: Allows efficient taxi clearance assignments. Reduces need for Strategic Flow initiatives.

Key Related Systems

Aeronautical Information Management
Broadcast Services Ground Station
Cockpit Display of Traffic Information Avionics
Common Automation Platform - Work Package 1
Common Display Subsystem - Remote Phase 1
Common Display Subsystem Phase 1
Communications Management System
Flight Object Management System - Terminal
General Weather Processor
Integrated Information Workstation - Build 1
NAS Voice Switch
National Airspace System Infrastructure Management System Phase 2
Surveillance Data Network
System Wide Information Management Spiral 2
Traffic Information Service-Flight Information Service Broadcast Server

Issues

Requires substantial equipage to exercise the capability. Requires certification of CDTI, with moving map and target positions for taxiing and maintaining separation along the taxiways. Requires certification of surveillance and controller displays for maintaining runway separation.

Service Airspace Management

Capability Airspace Design

Operational Improvement

Airspace Design using Space-Based Criteria (108102)

Airspace design criteria are based on altitudes as measured by space-based navigation support. Criteria for airspace structures are developed based on the capability of aircraft to accurately fly and maintain these "true" earth altitudes versus pressure altitude. While pressure altitudes will remain the efficient choice in higher altitude cruise, in many lower altitude situations the airspace structures will be based on the space-based capability of the aircraft and the relationship to separation criteria.

Benefits

Removing reliance on barometric-altitude capabilities in establishing airspace structures for avoidance of terrain and obstacles, approach

minima, etc. while allowing for more direct routings in both the horizontal and vertical plane

Key Related Systems

Terminal Area Route Generation Evaluation and Traffic Simulation

Issues

none identified

Operational Improvement

Current Airspace Design (108101)

Airspace designs consider, among other elements, the existing design, current and projected traffic usage, radio frequency congestion, effects of airport construction, proposed and existing surface structures, and environmental factors, such as noise abatement. Airspace designs provide the aviation community the description, operational composition, and status of airspace/airport components of the NAS required to support separation and synchronization services.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Airspace Simulation and Analysis for Terminal Procedures
Sector Design Analysis Tool
Terminal Area Route Generation Evaluation and Traffic Simulation

Issues

none identified

Operational Improvement

Design Criteria for Flight Objects (108104)

All uses of airspace evolve from the current reservation system to a common flight plan/profile for all uses. Thus a special use airspace (SUA) activity would include the time duration and volume of airspace around the trajectory required to execute the mission. This improvement acknowledges the increased requirement for dynamic airspace restrictions with variable separation for security, military operations, Remotely Operated Aircraft, (ROA), and reusable launch vehicles, (RLV). The activity to control the entry into the system of such profiles remains an airspace function, but the actual management of the data becomes united with the flight processing system.

Benefits

By assigning airspace that minimizes impact interaction with the expected flow, fewer flights will be subject to the SUA airspace constraint. Second, for those flights still subject to the constraints, the limitations on access to airspace for most efficient routings are reduced. This includes accurate understanding of the schedule for the airspace, but by managing the scheduling in the Flight Object Management System, (FOMS), the auto-notification future to changes in constraints is available as well as alternative flight profiles that use the airspace if available.

Key Related Systems

Terminal Area Route Generation Evaluation and Traffic Simulation

Issues

none identified

Capability Airspace Management

Operational Improvement

Current Airspace Management (108201)

Current airspace management assigns airspace classification to volumes of airspace. Within those airspaces the service provides and develops sectorizations and routings based on the characteristics of the aircraft operating with in those airspace volumes. Airspace Management also reviews construction projects for their impact on airspace, and designates and schedules airspace for special use for activities. Designs are limited by the minimum capabilities of aircraft allowed within a class of airspace and by the limitation of automation and the management/coverage of CNS (communication and navigation systems) assets.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Common Automated Radar Terminal System - Model IIIE

Issues

none identified

Operational Improvement

Dynamic Resectorization (108207)

Dynamic resectorization provides tools to allow for more definition of airspace configuration changes, with automated functions to evaluate and develop asset assignments. Dynamic resectorization supports system-to-system coordination of the reassignments across facility boundaries. Dynamic resectorization allows more refined mitigation of weather and flow problems than can be conducted with the multiple set of pre-defined and coordinated plans.

Benefits

Dynamic re-sectorization allows the capacity (controllers) to be moved to the changing flow rather than staffing to potential flow changes. These changes are designed during the course of the day; communications, navigation and surveillance assets are evaluated and remapped including voice and data communications to the flight deck via the Communication Management System as well as sensor information via the Surveillance Data Network. When this involves more than one facility the coordination is conducted over the System Wide Information Management, (SWIM), via the Swim Management Unit. Display information is updated in Standard Automation Platform to reflect the changes and at the agreed to moment, all changes are made. The updated information is reflected in new volumes of interest in Flight Object Management System assuring that the flight data is distributed appropriately. The changes are also provided via Aeronautical Information Management and SWIM to all interested parties.

Key Related Systems

Communications Management System
Flight Object Management System - Terminal
Surveillance Data Network

Issues

none identified

Operational Improvement

Expand use of RNAV/RNP Procedures (108203)

Provide airspace design changes to increase access, efficiency and capacity utilization by developing and publishing Area Navigation (RNA) and RNAV Required Navigation Performance (RNP) routings in the NAS. RNAV/RNP provides increased routing to allow more efficient routes of flight and merging of traffic, increased opportunities to manage flow with more defined and closely separated paths. Allows flows that are currently co-mingled due to lateral spacing requirements to be segregated in individual paths.

Benefits

By refining navigation system performance and airspace containment to a 99.999% certainty, maximum benefit can be derived from RNP. The accurate, repeatable paths, and integrity and continuity ensure procedures will be flown in the same manner by all aircraft. Controllers can then expect aircraft to be at a specific position with a high degree of confidence, and thus maximize safety and the efficient flow of aircraft through airspace. This improved containment will be used to refine obstacle evaluation when developing routes and procedures. Other benefits are:

·Reduced route separation resulting in increased airspace capacity and efficiency

·Improved obstacle clearance limits

·Lower landing weather minimums

·Reduced pilot and controller

Key Related Systems

Aeronautical Information Management
En Route Automation Modernization
Global Positioning System
Global Positioning System Avionics
Local Area Augmentation System Avionics
Local Area Augmentation System Category I
Standard Terminal Automation Replacement System
System Wide Information Management Spiral 2
Wide Area Augmentation System
Wide Area Augmentation System Avionics

Issues

none identified

Operational Improvement

Flexible Airspace Management (108206)

Provide expanded capabilities to utilize the multiple configurations. The capability to define and manage asset assignment (re-mapping of flight information, radar information etc, to the appropriate positions) is greatly enhanced making the use of multiple pre-defined configurations including sharing of airspace across facility boundaries possible. Includes tools to define and support the design of alternatives as well as re-mapping of flight information, radar information etc, to the appropriate positions.

Benefits

The concept of airspace sectorization underlying today's air traffic control (ATC) dates from a time when the flow of traffic was more structured and predictable than it is today. Sector boundaries are determined in a strategic, off-line process that evaluates typical traffic and controller workload patterns and subdivides the airspace to make best use of the available resources. When conditions deviate substantially from the norm, limited and preplanned airspace adjustments, increased sector staffing, and traffic restrictions are employed as appropriate to accommodate the situation. These solutions are effective but costly. A more flexible airspace concept such as in ERAM and future STARS allows boundaries to be adjusted to the prevailing traffic flow, giving ATC personnel an additional tool that may be used to manage sector demand and reduce boundary-related controller workload. In this phase the adjustments are based on multiple pre-configured alternatives are developed, published in AIM during long term planning. Access to the plans is available via the System Wide Information Management system to all interested parties.

Key Related Systems

Aeronautical Information Management
Standard Terminal Automation Replacement System
System Wide Information Management Spiral 1

Issues

none identified

Operational Improvement

Increase Capacity And Efficiency Using RNAV (108209)

Provide airspace design changes to increase access, efficiency and capacity utilization by developing and publishing Area Navigation (RNAV) routings in the NAS. RNAV routing allows greater access to airspace and efficiency of flight by providing the service provider and user greater options.

Benefits

Today's airways are based on a system of ground-based navigational aids (Navaids). Flying from one navigational fix to another generally increases user distance and time. Providing charted more direct routes to save time and fuel. Terminal airspace can often be a time and distance constraint on VFR aircraft. By providing RNAV corridors for VFR flights through Class B airspace, access can be gained to more efficient routings without increasing the workload the service provider.

Key Related Systems

Global Positioning System
Global Positioning System Avionics

Issues

none identified

Operational Improvement

Redesign High Altitude Airspace (108211)

Provide airspace designs that exploit the full advantage of the flight deck capability as well as the advanced Decision Support Tools. Sizing the volume of coverage and traffic for the service provider based on fully exploiting the capability of Area Navigation (RNAV), Requied Navigational Performance (RNP) and decision aiding. Starting first at the highest altitudes with crafting the design and procedures to reduce the required interaction between the controller and aircraft while providing flexibility to the user in planning the flight profile. Operational Description as part of the National Airspace Redesign, the High Altitude Redesign (HAR) programs focus is to develop and implement fundamental changes in navigation structure and operating methods for en route operations for the high altitude airspace environment. RNAV/RNP), and point-to-point navigation will incrementally replace the higher altitudes of the present jet-route structure. The redesign activities are founded on industry/government recommended concepts from RTCA Select Committee 192 (SC192). The goal is to provide more freedom to properly equipped users and to achieve the economic benefits of flying user selected non-restrictive routings.The redesign implementation will be done in phases and will progress based on customer equipage and technological advancement in ground based Air Traffic Control systems. The initial implementation, Phase 1, is at the very high flight levels. Additional flight levels will be added as technology and systems allow.

Benefits

Increased efficiency in routings since aircraft will fly on user preferred trajectories except a point of congestion. Points of congestion due to mixing flow or special use airspace will be mitigated by the use of RNAV/RNP defined routes providing for the most time, distance, altitude merging of the traffic.

Key Related Systems

Global Positioning System
Global Positioning System Avionics

Issues

none identified

Service Emergency and Alerting

Capability Alerting Support

Operational Improvement

Current Emergency Alerting Support (106201)

Indirect assistance is for events and circumstances in which the response is external to the system. For example, when information is received that an aircraft is overdue or missing, emergency locator transmitter signals are received, or search and rescue services may be required. Alerting support provides the relevant information and coordinates with appropriate international, military, federal, state, and local agencies. The appropriate organization(s) then provide the direct response(s).

Benefits

Current operations are provided in the NAS.

Key Related Systems

Air Route Surveillance Radar - Model 1E
Air Route Surveillance Radar - Model 2
Air Route Surveillance Radar - Model 3
Air Route Surveillance Radar-Model 4
Air Traffic Control Beacon Interrogator - Model 6
Air Traffic Control Beacon Interrogator-Model 4
Air Traffic Control Beacon Interrogator-Model 5
Airport Surface Detection Equipment-Model 3
Airport Surveillance Radar - Model 9
Airport Surveillance Radar Model 11
Airport Surveillance Radar Model 8
Airport Surveillance Radar, Military
Airport Surveillance Radar-Model 7
Automated Radar Terminal System Color Display
Common Automated Radar Terminal System - Model IIE
Common Automated Radar Terminal System - Model IIIA
Common Automated Radar Terminal System - Model IIIE
Digital Airport Surveillance Radar
Digital Voice Recorder System
Display System Replacement
Display System Replacement Console Reconfiguration Monitor Replacement
Emergency Locator Transmitter
Emergency Locator Transmitter-Satellite
En Route Communications Gateway
Enhanced Terminal Voice Switch
Full Digital Automated Radar Terminal System Display
Heating, Ventilation and Air Conditioning-Long-Range Radar
High Frequency Airborne Radios
High Frequency Communications
Host Computer System/Oceanic Computer System Replacement
Integrated Communications Switching System Type I
Integrated Communications Switching System Type II
Integrated Communications Switching System Type III
Low-Density Radio Communications Link
Microprocessor-En Route Automated Radar Tracking System
Operational and Supportability Implementation System
Operational and Supportability Implementation System Work Station
Power System - Long-Range Radar
Radar Automated Display System
Radio Communication Link
Radio Control Equipment

Rapid Deployment Voice Switch Type I
Rapid Deployment Voice Switch Type II
Rapid Deployment Voice Switch Type IIA
Remote Automated Radar Terminal System Color Display
Small Tower Voice Switch
Standard Terminal Automation Replacement System
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios
Ultra High Frequency Ground Radios - Replacement
Very High Frequency Airborne Radios
Very High Frequency Ground Radios
Very High Frequency/Ultra High Frequency Emergency Communications Transceivers - Terminal

Issues

None

Operational Improvement

Enhance Emergency Alerting (106202)

Controllers and search and rescue support, using Global Positioning System location information and discrete aircraft identification, locate distressed or downed aircraft, through automatic dependent surveillance system-broadcast. Controllers improve their ability to assist in locating a downed aircraft and to identify and track visual flight rules flights.

Benefits

With the use of GPS, a Controller's ability to assist in locating a downed airplane is improved.

Key Related Systems

Automatic Dependent Surveillance-Broadcast Avionics
Broadcast Services Ground Station
En Route Automation Modernization
Global Positioning System
NAS Voice Switch

Issues

None

Capability Emergency Assistance

Operational Improvement

Current Emergency Assistance (106101)

Direct support protects individuals and property both in the air and on the ground. Among other things, direct support includes location and navigation assistance for orientation, guidance to emergency airports, and generation of alternative courses of action.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Air Route Surveillance Radar - Model 1E
Air Route Surveillance Radar - Model 2
Air Route Surveillance Radar - Model 3
Air Route Surveillance Radar-Model 4
Air Traffic Control Beacon Interrogator - Model 6
Air Traffic Control Beacon Interrogator-Model 4
Air Traffic Control Beacon Interrogator-Model 5
Airport Surveillance Radar - Model 9
Airport Surveillance Radar Model 11
Airport Surveillance Radar Model 8
Airport Surveillance Radar, Military
Airport Surveillance Radar-Model 7
Automated Radar Terminal System Color Display
Common Automated Radar Terminal System - Model IIE
Common Automated Radar Terminal System - Model IIIA
Common Automated Radar Terminal System - Model IIIE
Digital Airport Surveillance Radar
Digital Voice Recorder System
Display System Replacement
Enhanced Terminal Voice Switch
Flight Data Input/Output
Full Digital Automated Radar Terminal System Display
Heating, Ventilation and Air Conditioning-Long-Range Radar
High Frequency Airborne Radios
High Frequency Communications
Integrated Communications Switching System Type I
Integrated Communications Switching System Type II
Integrated Communications Switching System Type III
Microprocessor-En Route Automated Radar Tracking System
Mode 3/AC Transponder
Mode Select Transponder
Multi-Mode Digital Radios
Power System - Long-Range Radar
Radar Automated Display System
Radio Communication Link
Radio Control Equipment

Rapid Deployment Voice Switch Type I
Rapid Deployment Voice Switch Type II
Rapid Deployment Voice Switch Type IIA
Remote Automated Radar Terminal System Color Display
Small Tower Voice Switch
Standard Terminal Automation Replacement System
Traffic Alert and Collision Avoidance System
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios
Ultra High Frequency Ground Radios - Replacement
Very High Frequency Airborne Radios
Very High Frequency Ground Radios
Very High Frequency/Ultra High Frequency Emergency Communications Transceivers - Terminal

Issues

None

Service Flight Planning

Capability Flight Data Management

Operational Improvement

Current Flight Data Management (101201)

All users (e.g., general aviation, commercial, military, Customs, law enforcement) submit flight plan data for processing. This includes validating flight plans; notifying users of any problems; and flight plan activation, processing amendments, cancellations, and flight plan closures. The NAS disseminates flight plan information as necessary.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Aeronautical Information System
Direct User Access Terminal Service
Flight Service Data Processing System
Instrument Approach Procedures Automation
Model One Full Capacity
National Airspace Data Interchange Network Message-Switched Network
National Airspace Data Interchange Network Packet-Switched Network
Operational and Supportability Implementation System

Issues

none identified

Operational Improvement

Trajectory Flight Data Management (101202)

Flight planning and filing up to 180 days before the day of flight receive support. Flight data processing (FDP) incorporates flight data information from the flight deck into the trajectory and conformance modeling. All flight plans are treated as trajectories with protected volumes supporting military operations as well as remotely operated aircraft and reusable launch vehicles. FDP uses volumes of interest to determine the relationship of the trajectory and the interest of service providers. Changes to flight profiles can be negotiated with a strategic planner and updated, which reduces the workload on the tactical provider. This ensures that all changes are consistent with current flow objectives.

Benefits

The flight data management system provides status and trajectories based on the aircraft dynamics and route of flight. Entry into a volume of interest and the point of piercing is calculated and not pre-ordained/constrained. This facility supports coordination between facilities with greater flexibility than today helping keep access to airports open by readily facilitating re-routes, supporting more flexible use of controller/capacity assets by managing data based on volumes of interest that can be redefined to meet change to airspace/ routings. This flexibility allows the NAS to maintain major flows in the face of off-nominal conditions.

Key Related Systems

Communications Management System
Flight Object Management System - Terminal
Integrated Information Workstation - Build 1
Next Generation Traffic Flow Management

Issues

·Need Concept of Use for Flight Management for early filing and maintenance of flight profiles (changes from the anticipation of flights based on OAG and historical use) to strategies for user early filing and its role in asset assignment. ·Need Concepts of Flight Management (Strategic Flow to Clearance delivery) ·Need Airspace Management's development of Flexible Airspace and Dynamic Re-sectorization to exploit advance flight management capabilities for benefits ·Need to identify event triggers within Flight Data Management to trigger trajectory updates - clearance deliver, hand-off coordination, etc to improve both traffic synchronization and strategic flow. ·Need a Concept of Use for incorporation of flight deck information to improve trajectory prediction ·Need a concept of use for the delivery of flight information to other government agencies

Capability Flight Plan Support

Operational Improvement

Current Flight Plan Support (101101)

NAS users receive essential weather and aeronautical information to support flight planning. Flight planning requires such information as expected route, altitude, time of flight, available navigation systems, available routes, special use airspace restrictions, daily demand conditions, and anticipated flight conditions, including weather and sky conditions (e.g., the presence of volcanic ash, smoke, and/or birds). NAS flight plan processing provides evaluation and feedback for both domestic and international flight plans. Aeronautical information includes notices to airmen concerning establishment or condition of, or change in, any NAS component (i.e., facility, service, or procedure) or NAS hazard. Users need to receive this information in a timely manner because it is essential to flight.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Aeronautical Information System
Direct User Access Terminal Service
Flight Service Data Processing System
Host Computer System/Oceanic Computer System Replacement
Instrument Approach Procedures Automation
Model One Full Capacity
Operational and Supportability Implementation System
Voice Switching and Control System Modification (Control Subsystem Upgrade)

Issues

none identified

Operational Improvement

Provide Full Flight Plan Constraint Evaluation with Feedback (101102)

Users' and service providers' receipt of the real-time and projected status of special use airspace promotes their ability to gain access to the area. All users and service providers receive the same level of NAS-wide information. General aviation and commercial operators receive the same level of support through in collaborative decision making. The increase in timely and accurate information lets users more predictably plan and fly the routing that meets their individual objectives.

Benefits

The incorporation of additional information from AIM into the flight plan support system and automatic checking with feedback allow the user to file profiles that more accurately reflect all known constraints in the NAS. This results in the flight as flown, more closely reflecting the filed FP improving strategic conformance monitoring by other agencies since the number of amendments are reduced. This also improves the predictability since more of the constraints are visible to the user increasing the confidence that the flight plan is the flight that can be flown. Implementation of the AIM and the incorporation of its information into the flight plan support automation also increases access since airspace that is available but whose status is unclear is inaccessible to the prudent planner. Finally by providing a fuller set of constraints the user can more easily develop flight plans which can help address off-nominal situations such as late departure, weather, etc. and mitigate the effects to overall schedules.

Key Related Systems

Collaborative Air Traffic Management Technologies Work Package 1

Issues

· Need to have improved airspace management of SUA to achieve benefits · Need to have link between Strategic Flow and Flight Planning congestion constraints and/or flow initiatives to achieve benefits · Need to have NOTAMS/infrastructure initiatives linked from infrastructure management to AIM to achieve benefits

Operational Improvement

Provide Interactive Flight Planning from Anywhere (101103)

NAS users receive interactive feedback regarding proposed flight plans based on such current constraints as special use airspace, weather, en route congestion, NAS operations, and maintenance status. Flight plan evaluation improves traffic flow and the airlines' ability to exchange information and negotiate flight plan changes in near real-time ability. Access via SWIM, (System Wide Information Management), is available from the flight deck as easily as it is from any ground connection. This is the flight deck side of management by trajectory, and it increases everyone's ability to perform conformance monitoring. Since the flight plans now accurately reflect the NAS constraints only small tactical deviations are present in NAS; all other changes are developed and coordinated electronically. Finally, in the longer-term aspects of this step, iterative trial planning becomes automated using agents.

Benefits

The continued evaluation with feedback on potential constraints decreases the likelihood that a change in conditions that might have previously gone unnoticed could result in a flight now being subjected to an environment beyond the capabilities of the pilot or equipment. The iterative planning, the feedback on changing constraints and the ability to maintain multiple profiles increases the likelihood that the flight as flown is more closely aligned with the flight as intended. Also all the functionality present in the flight plan evaluation is available from the flight deck. This allows the user to develop and submit amendments to the flight while in flight including changes to or adding profiles. This is the flight deck side of management by trajectory and increases the ability of all to perform conformance monitoring since only small tactical deviations will be present in NAS as all other changes are developed and coordinated electronically. By removing the controller from the active participation in the flight plan change requests and by requiring the controller to only review and improve the plan changes with a tactical horizon, the re-plans developed are closer to user objectives, the plan considers all downstream constraints including those that no longer exist such as airspace now available, the removal of these tasks and the increased certainty in the future allows controllers to accept and handle more aircraft. The ability of service provider other than the tactical controller to enter into flight planning with the flight deck also increases the ability to mange aircraft against available controller assets increasing the utilization and supports right-sizing of traffic assignments.

Key Related Systems

Communications Management System
Flight Object Management System - Terminal
General Weather Processor
Integrated Information Workstation - Build 1
Next Generation Traffic Flow Management
System Wide Information Management Spiral 2

Issues

· Need to develop a concept of use for data messaging that includes its role in separation assurance as well as/differentiating from delivery of other ATM services. · Separation Assurance need to develop changes in clearance delivery beyond tactical realm to achieve benefit · Incorporation of flight object provided information into Traffic Synchronization to acieveachieve benefits · Changes to Airspace Management to incorporate Scheduling and Management of Special Use into Flight Planning

Service Infrastructure-Information Management Service

Capability Government-Agency Support

Operational Improvement

Current Government/Agency Support (109301)

The FAA provides information and coordination services and support to other federal and state government agencies. ATC supports DoD operations, law enforcement missions, forest fire-fighting operations, and state aviation managers. ATC implements temporary flight restrictions over geographic areas for specified events and supports natural disaster relief flights, medical emergency flights, and drug interdiction flights. The FAA disseminates all available information to the appropriate agencies during search and rescue operations and to the NTSB and other entities during incident and accident investigations.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Command and Control Communications

Issues

None

Operational Improvement

Enhance Government/Agency Support (109302)

The FAA provides information and coordination services and support to other federal and state government agencies through System Wide Information Management (SWIM). ATC supports DoD operations, law enforcement missions, forest fire-fighting operations, and state aviation managers. ATC implements temporary flight restrictions over geographic areas for specified events and supports natural disaster relief flights, medical emergency flights, and drug interdiction flights. The FAA disseminates all available information to the appropriate agencies during search and rescue operations and to the NTSB and other entities during incident and accident investigations.

Benefits

Other Government agencies automatically receive needed NAS status information, removing the need for human intervention.

Key Related Systems

System Wide Information Management Spiral 1

Issues

Security concerns (such as ensuring that only the intended recipient receives a message) will need to be addressed before this feature can be implemented.

Capability Monitoring and Maintenance

Operational Improvement

Current Monitoring And Maintenance (109101)

Maintaining, operating, and managing the infrastructure requires a variety of planning, engineering, analysis, repair, and maintenance functions. It also encompasses monitoring status, real-time assessments, and implementation of systems in the NAS. Included are activities to monitor the NAS status, detect and isolate failures and outages, and perform corrective and preventive maintenance to ensure NAS operational readiness. While there are some systems that can be remotely monitored, the status of many assets is detected by periodic testing or through pilot/controller reports of loss of capability.

Benefits

Current operations are provided in the NAS.

Key Related Systems

NAS Infrastructure Management System Phase 1

Remote Maintenance Monitoring System

Issues

None

Operational Improvement

Increase Remote Monitoring and Maintenance (109102)

Additional capabilities provide Airways Facilities personnel A) a top-down view of a problem from a larger perspective (including the Operations Control Center [OCC] and the National Operations Control Center [NOCC]) instead of only the local view, B) increased remote maintenance, and C) intelligent automatic fault correction.

Benefits

Providing a NAS wide view, allowing Airways Facilities personnel to identify patterns and NAS-wide issues. The NAS will be more efficiently managed. Some automated processes will be performed automatically by Decision Support System software. Human responses will also be more efficient, as the responses will be based on better, more complete information.

Key Related Systems

National Airspace System Infrastructure Management System Phase 2

Issues

Because NIMS provides functionality to AF personnel, it is considered a less-essential project than other ATC projects. As a result, the NIMS budget continuously is at risk.

Capability Spectrum Management

Operational Improvement

Current Spectrum Management (109201)

Spectrum management secures, protects, and manages the radio spectrum for the FAA and the U.S. Aviation community. It is the focal point for management policy and plans, engineering, frequency assignment, radio interference resolution, radiation hazard, obstruction evaluation, electronic counter measures, and other National/International spectrum activities.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Power Systems

Issues

none identified

Service Navigation

Capability Airborne Guidance

Operational Improvement

Cat I Precision Approach (GLS) (107105)

The Global Positioning System (GPS) and Wide Area Augmentation System (WAAS) broadcast signals that are received and processed by

aircraft avionics to provide accurate aircraft position information. The position information is sufficiently accurate throughout the NAS to support runway Category I precision approaches and departure guidance.

Benefits

Space-based WAAS navigation and landing is a cost effective alternative to ILSs for implementation of Cat I approaches since it does not require the installation and maintenance of individual ILS. At airports with multiple ILS the total number of ILS required may be reduced. At airports requiring new Category I service only the necessary landing and runway lights, visibility monitors, etc. need to be installed to provide the needed service.

WAAS also enables Cat I landing capabilities to runways where ILS cannot be installed due to terrain or obstacles. This same capability can be exercised at airports where Cat I ILS approaches to neighboring runways and/or airports cause operational dependencies between approaching/departing aircraft.

Key Related Systems

Global Positioning System
WAAS Corrections Broadcast Service
Wide Area Augmentation System
Wide Area Augmentation System Avionics
Wide Area Augmentation System Technology Refresh

Issues

Availability of backup ground-based Cat I landing systems for GPS/WAAS.

Operational Improvement

Cat II-III Precision Approaches (GLS) (107107)

Local Area Augmentation Systems (LAAS) will support precision approaches to Category I, Category II and Category III minimums for properly equipped runways and aircraft. LAAS will support approach minimums at airports where ILS cannot meet performance requirements due to terrain, obstacle or other restrictions.

Benefits

Increased airport access for precision approaches, reduced ground equipment for multiple runway airports, and advanced approach and departure procedures.

Key Related Systems

Global Positioning System
Local Area Augmentation System Avionics
Local Area Augmentation System Category I
Local Area Augmentation System Category II/III
Wide Area Augmentation System Avionics

Issues

Backup precision landing capability for loss of GPS/LAAS

Operational Improvement

Current Enroute Navigation (107101)

Independent ground and space-based navigation systems support both area navigation (point-to-point) and flights on published Jetroutes and Victor Airways.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Distance Measuring Equipment
Distance Measuring Equipment Avionics
Global Positioning System
Global Positioning System Avionics
Inertial Navigation System Avionics
Tactical Air Navigation Avionics
Tactical Air Navigation System
Very High Frequency Omnidirectional Range
Very High Frequency Omnidirectional Range Avionics
WAAS Corrections Broadcast Service
Wide Area Augmentation System
Wide Area Augmentation System Avionics

Issues

None

Operational Improvement

Current Non-precision Approach and Departure (107111)

Ground-based navigation aids provide guidance to and/or along runway centerline extended for non-precision landings and also departure guidance, per published approach and departure procedures.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Distance Measuring Equipment
Distance Measuring Equipment Avionics
Global Positioning System
Global Positioning System Avionics
Instrument Landing System Avionics
Localizer
Tactical Air Navigation Avionics
Tactical Air Navigation System
Very High Frequency Omnidirectional Range

Very High Frequency Omnidirectional Range Avionics
Visual Approach Slope Indicator
WAAS Corrections Broadcast Service
Wide Area Augmentation System
Wide Area Augmentation System Avionics

Issues

None

Operational Improvement

Current Precision Approach, Landing and Departure (107104)

Ground-based instrument landing systems support precision approach and landings for Category I, II and III visibility and decision height minimums. These landing systems radiate precision lateral and vertical descent guidance signals that are received and processed by aircraft navigation avionics to guide the aircraft to the runway. Precision approach systems can be supplanted with marker beacons, which indicate the distance from the aircraft current position to the runway threshold, and Distance Measuring Equipment (DME).

Benefits

Current operations are provided in the NAS.

Key Related Systems

Distance Measuring Equipment
Distance Measuring Equipment Avionics
Instrument Landing System Avionics
Instrument Landing System Category I
Instrument Landing System Category II/III
Microwave Landing System
Radar Altimeter Avionics
Runway Visual Range

Issues

None

Operational Improvement

Domestic RNP Navigation (107114)

Aircraft navigate in the NAS using Required Navigation Performance (RNP) rated avionics. RNP-based navigation ensures an aircraft's position is known within a defined airspace volume, thereby allowing decreased separation between same-RNP capable aircraft.

Benefits

RNP is an enabler to airspace design and to separation. The ability to design and deliver routes with less lateral spacing increases capacity of airspace constrained by terrain or special use airspace since more parallel routes can be designed and made available. RNP improves the access to congested airspace since multiple routes can be designed to separate aircraft that are currently commingled on arrival or departure to a terminal and thus in many cases receive a single airport/runway's restriction.

Key Related Systems

Global Positioning System
Global Positioning System Avionics
Inertial Navigation System Avionics
Loran-C Avionics
WAAS Corrections Broadcast Service
Wide Area Augmentation System
Wide Area Augmentation System Avionics

Issues

Equippage.

Operational Improvement

Oceanic Satellite Navigation (RNP-4) (107102)

Improved avionics utilize augmented or non-augmented Global Positioning System (GPS) data so aircraft can achieve Required Navigation Performance -4 (RNP-4) on oceanic routes. RNP ensures increased safety because the aircraft's position is always known to lie within a specific volume of airspace.

Benefits

RNP-4 provides the necessary navigational performance to establish lower longitudinal and lateral spacing between designated tracks and for aircraft within tracks. This enables increased access to the most favorable winds and altitudes, thus reducing the average fuel-burn and time enroute.

Key Related Systems

Global Positioning System
Global Positioning System Avionics
Inertial Navigation System Avionics

Issues

Equippage

Operational Improvement

RNAV SIDS, STARS and Approaches (107103)

Area navigation is supported throughout the NAS using affordable Global Positioning System (GPS) based avionics with Wide Area Augmentation System (WAAS) capabilities to provide the required position accuracy along a specified direct route.

Benefits

Area navigation supported by low-cost WAAS avionics allows aircraft to fly direct routes, thereby reducing flight time and fuel consumption. WAAS also supports increased situational awareness as an enabler for improved advisory services, and expands the clearance options for controllers in separation assurance. WAAS provides increased access to airport runways in less than optimal Visual Meteorological Conditions (VMC), reducing the possibility of CFITs on approach as well as reducing the amount of holds/diversions, saving lives, fuel and time. WAAS-enabled area navigation provides benefits to pilots and communities by expanding the annual available runway hours.

Key Related Systems

Global Positioning System

Global Positioning System Avionics
WAAS Corrections Broadcast Service
Wide Area Augmentation System
Wide Area Augmentation System Avionics

Issues

Defining backbone locations for ground-based navaids to serve as a backup to WAAS.

Capability Surface Guidance

Operational Improvement

Current Airport Surface Guidance (107201)

Aircraft use runway and taxiway lighting, markage, and signage for movement on an airport.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Runway Centerline Lighting
Runway Lights

Issues

Funding of ground and space based systems to ensure this capability is implemented to improve airport safety and to assist in preventing runway incursions.

Operational Improvement

Low Visibility Operations (107202)

Aircraft and ground vehicle movement on airports in low visibility conditions is guided by accurate location information and moving map displays.

Benefits

Improved airport surface safety and capacity.

Key Related Systems

Automatic Dependent Surveillance-Broadcast Avionics
Broadcast Services Ground Station
Cockpit Display of Traffic Information Avionics
Cockpit Display of Traffic Information for Safe Flight 21 Avionics
Enhanced Vision System
Global Positioning System
Global Positioning System Avionics
Local Area Augmentation System Avionics
Local Area Augmentation System Category I
Local Area Augmentation System Category II/III
National Airspace System Infrastructure Management System Phase 2
Surface Traffic Information Processor
Surface Vehicle Identification System
Traffic Information Service-Flight Information Service Broadcast Server

Issues

Aircraft and vehicle equipage.

Service TM-Strategic Flow

Capability Flight Day Management

Operational Improvement

Current Flight Day Management (105201)

Participating aircraft operation centers and the FAA have real-time access to current NAS status information, including infrastructure and operational factors. There is an electronic exchange of NAS status information and flight plan information, and interactive decision support tools increase NAS user and traffic manager flexibility to manage flight operations under current constraints, such as special use airspace, equipment and facility status, and weather conditions. The airlines and Traffic Management improve in exchanging information and negotiating flight plan changes in a near real-time ability (Free Flight Phase 1 activity).

Benefits

Current operations are provided in the NAS.

Key Related Systems

Collaborative Decision Making Workstation
Collaborative Routing and Coordination Tool
Post Operations Evaluation Tool
Weather and Radar Processor Stage 3

Issues

none identified

Operational Improvement

Enhance Collaborative Decision Making (105205)

A more robust interactive decision support toolset increases NAS user and traffic manager flexibility to manage flight operations by interfacing with the multiple systems that provide current constraints. These include special use airspace, equipment and facility status, and weather conditions. Traffic management and airlines improve in negotiating planned equipment outages.

Benefits

Collaboration optimizes individual business cases. Improved decision support systems provide users and service providers common situation awareness and a visual displays of resources and demand to manage more complex traffic flows.

Key Related Systems

Aeronautical Information Management
Collaborative Air Traffic Management Technologies Work Package 1
Collaborative Routing and Coordination Tool

National Airspace System Infrastructure Management System Phase 2

Issues

none identified

Operational Improvement

Full Collaborative Decision Making (105207)

An interactive decision support toolset increases NAS user and traffic manager flexibility to manage flight operations. All users and traffic managers improve in exchanging information and negotiating flight plan changes. Collaborative routing enhancements improve aircraft operators' ability to flight-plan based on airspace availability and traffic managers' ability to plan responses to demand. There are slot allocation, routes, and mitigation strategies for congestion and weather, and tactical negotiation solutions of user requests are provided and their results distributed to the collaborative planning toolset.

Benefits

Productivity is increased through effective resource allocation. Improved predictability, efficient use of resources, increased opportunity for access, and flexibility to assign underutilized assets is enhanced by the documentation of CDM decisions. Predictability of available resources will improve access and increase capacity.

Key Related Systems

Aeronautical Information Management
Flight Object Management System - Terminal
General Weather Processor
Integrated Information Workstation - Build 1
Next Generation Traffic Flow Management
System Wide Information Management Spiral 2
Unified Decision Management System

Issues

none identified

Capability Long Term Planning

Operational Improvement

Current Long Term Planning (105101)

Establishing standard responses, such as playbooks to enable more efficient day of operations. Inputs include capacity and demand models based on airport use data, airspace for special use schedules, airline flight schedules, infrastructure status, and historical flight traffic demand information.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Enhanced Traffic Management System

Issues

none identified

Operational Improvement

Enhance Sector Demand Prediction and Resource Planning (105102)

Matching sectors and staffing better to anticipated demand promotes efficiency. This includes proactively adjusting airspace and personnel scheduling to an area based on projections of shift in demand to seasonal changes, as well as city pair business adjustments by airlines.

Benefits

Improved predictability, efficient use of resources, increased opportunity for access, and flexibility to assign underutilized assets.

Key Related Systems

System Wide Information Management Spiral 1
Unified Decision Management System

Issues

none identified

Operational Improvement

NAS Wide Sector Demand Prediction and Resource Planning (105104)

Strategic management of personnel and physical asset assignment and airspace modification are required to meet a change in systemic demand due to seasonality or airline city pair business case decisions. This includes proactively adjusting and assigning personnel to an area based on projections of shifting demand.

Benefits

Improved predictability, efficient use of resources, increased opportunity for access, and flexibility to assign underutilized assets.

Key Related Systems

Aeronautical Information Management
Next Generation Traffic Flow Management
Unified Decision Management System

Issues

none identified

Capability Performance Assessment

Operational Improvement

Continuous Metrics Evaluation (105302)

Assessment evaluates performance of airport, tower, terminal radar approach control facilities, and en route facilities. The analysis highlights where throughput is constrained and becomes the basis for strategic long-term planning. Evaluations of predicted scenarios and planning provide feedback for tool development and future planning.

Benefits

Productivity is increased through effective resource allocation. Predictability of available resources will improve access and increase capacity.

Key Related Systems

Flight Object Management System - Terminal

Integrated Information Workstation - Build 1
NAS Infrastructure Management System Phase 3
Next Generation Traffic Flow Management
Surveillance Data Network
System Wide Information Management Spiral 2

Issues

none identified

Operational Improvement

Current NAS Performance Assessment (105301)

A manual process of analysis supported by the Post Operations Evaluation Tool (POET) to review actions taken and their effect provides input to playbooks and standard operating procedures. Performance assessment covers system status and arrival/departure delay times.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Collaborative Decision Making Workstation
Enhanced Traffic Management System
Post Operations Evaluation Tool

Issues

none identified

Service TM-Synchronization

Capability Airborne

Operational Improvement

Flexible Entry for Oceanic Tracks (104102)

Controllers equipped with decision support systems to improve in-trail climbs, descents, and passing maneuvers for properly equipped aircraft improve user access and efficient use of oceanic airspace.

Benefits

The fly-as-filed percentage will increase, as will the user-requested reroute percentage being granted. These results in time and fuel savings.

Key Related Systems

Automatic Dependent Surveillance-Addressable Avionics
Enhanced-Advanced Technologies and Oceanic Procedures
Microprocessor-En Route Automated Radar Tracking System
Surveillance Data Network
System Wide Information Management Spiral 1

Issues

none identified

Operational Improvement

Consolidated Planning for Arrivals and Departures (104117)

Controllers and traffic managers, using arrival scheduling tools to synchronize traffic controlled by en route centers, improve traffic flow to airports. This includes improving delivery of aircraft to arrival fixes for better sequencing onto runways. With addition of widespread, real-time distribution of NAS data, the Multicenter Traffic Management Advisor is no longer needed.

Benefits

There will be a reduction in static airspace restrictions, which means that hourly flow by ARTCC and Sector will be increased, and airport peak operations rate will increase.

Key Related Systems

En Route Automation Modernization
Surveillance Data Network
System Wide Information Management Spiral 2

Issues

none identified

Operational Improvement

Current Arrival/Departure Sequencing (104109)

Airborne spacing and sequencing of air traffic safely maximizes NAS efficiency and capacity in the terminal portion of the arrival and departure phases of flight. Air traffic controllers provide traffic synchronization to aircraft by monitoring the situation, making control decisions, and modifying flight trajectories to meet operational objectives and accommodate user preferences. Controllers optimize the arrival and departure portion of flight by sequencing and spacing aircraft on final approach and departure. They apply separation standards to achieve efficient use of airports by applying manual controller optimization procedures. Traffic specialists and controllers use traffic displays and flight strips to establish flow initiatives, such as reassignment of flows (arrival and departure) to runways. This includes sequencing and spacing aircraft on closely spaced, parallel runways in visual meteorological conditions and instrument meteorological conditions.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Airport Surveillance Radar - Model 9
Airport Surveillance Radar Model 8
Airport Surveillance Radar-Model 7
Common Automated Radar Terminal System - Model IIE
Common Automated Radar Terminal System - Model IIIA
Common Automated Radar Terminal System - Model IIIE
Enhanced Terminal Voice Switch
Enhanced Traffic Management System
Flight Data Input/Output

Mode Select
Precision Runway Monitor
Rapid Deployment Voice Switch Type I
Rapid Deployment Voice Switch Type II
Rapid Deployment Voice Switch Type IIA
Standard Terminal Automation Replacement System
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios
Very High Frequency Airborne Radios
Very High Frequency Ground Radios

Issues

None

Operational Improvement

Current Conflict Probe (104103)

Airborne spacing and sequencing of air traffic safely maximizes efficiency and capacity of the NAS during the en route phase of flight. Controllers provide traffic synchronization to en route aircraft by monitoring the situation, making control decisions, and modifying flight trajectories to meet operational objectives and accommodate user preferences. They achieve this by applying manual controller optimization procedures. Controllers using traffic displays and flight strip information integrate user preferences with separation requirements. They apply separation standards to achieve efficient use of navigable airspace.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Air Route Surveillance Radar - Model 2
Air Route Surveillance Radar - Model 3
Air Route Surveillance Radar-Model 4
Air Traffic Control Beacon Interrogator-Model 4
Air Traffic Control Beacon Interrogator-Model 5
Display System Replacement
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios
User Request Evaluation Tool Core Capability Limited Deployment
Very High Frequency Airborne Radios
Very High Frequency Ground Radios

Issues

none identified

Operational Improvement

Current Oceanic Conflict Probe (104101)

Airborne spacing and sequencing of air traffic safely maximizes efficiency and capacity of the oceanic airspace. Controllers provide traffic synchronization to aircraft during oceanic flight by monitoring the situation, making control decisions, and modifying flight trajectories to meet operational objectives and accommodate user preferences. They achieve this by applying manual controller optimization procedures. Controllers use flight strip information with an initial decision support to integrate user preferences with separation requirements. They apply separation standards to achieve efficient use of navigable airspace.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Dynamic Ocean Tracking System
Flight Data Input/Output
Future Air Navigation System 1/A
Microprocessor-En Route Automated Radar Tracking System
Multi-Sector Oceanic Data Link
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios
Very High Frequency Airborne Radios
Very High Frequency Ground Radios

Issues

None

Operational Improvement

Current Tactical Management Of Flow in the En Route for Arrivals/Departures (104115)

Proper spacing and sequencing of air traffic maximizes NAS efficiency and capacity in the arrival and departure phases of flight. Controllers provide traffic synchronization to aircraft by monitoring the situation, making control decisions, and modifying flight trajectories to meet operational objectives and accommodate user preferences. They achieve this by applying manual controller optimization procedures. Traffic specialists and controllers use traffic displays (radar and enhanced traffic management system) and flight strips to establish flow initiatives, such as assignment to alternative arrival flows or miles-in-trial requirements.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Air Route Surveillance Radar - Model 2
Air Route Surveillance Radar - Model 3
Air Route Surveillance Radar-Model 4
Air Traffic Control Beacon Interrogator-Model 4
Air Traffic Control Beacon Interrogator-Model 5
Display System Replacement

Enhanced Traffic Management System
Flight Data Input/Output
Traffic Management Advisor Display (Free Flight Phase 1)
Traffic Management Advisor Single Center (Free Flight Phase 1)
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios
Very High Frequency Airborne Radios
Very High Frequency Ground Radios

Issues

none identified

Operational Improvement

Manage Arrival and Departure Flows by Crossing and Merging Virtual Streams (104120)

Placing aircraft into a virtual stream improves the flow of traffic in the en route envirnoment. In addition, controllers receiving descent profile information for planning an efficient flow enhance flight descent profiles for arriving aircraft.

Benefits

EDA and EDP can lead to substantial benefits in capacity, fuel-efficiency, and controller productivity. Capacity benefits are achieved through accurate Terminal Radar Approach Control delivery under a Traffic Management Advisor plan that is optimized for maximum throughput to the runway. Expedited departures and unrestricted climbs will save both time and fuel for users.

Key Related Systems

Common Automation Platform - Work Package 1
Flight Object Management System - En Route
System Wide Information Management Spiral 2

Issues

none identified

Operational Improvement

Optimize Runway Assignments - Terminal (104114)

Controllers improve sequencing and spacing of arriving aircraft with tools for better managing the runway assignment for aircraft in the terminal. This includes automation to generate instructions for aircraft heading and speed based on the addition of aircraft performance parameters to the algorithms and the addition of wake vortex information. This improves the terminal controller's ability to accommodate user requests for flight profiles and runway assignments while still optimizing flow. Pilots improve capabilities to follow other aircraft, fly approaches, and land on closely spaced parallel approaches in poor weather conditions. Additionally, a path from runway to en route stream is established to improve the flow of departure aircraft which includes using speed and heading advisories.

Benefits

Increased throughput and saving of time and fuel for the user will result.

Key Related Systems

Common Automation Platform - Work Package 1
Common Display Subsystem Phase 1
Flight Object Management System - Terminal
General Weather Processor
Integrated Information Workstation - Build 1

Issues

none identified

Operational Improvement

Provide Conflict Probe with Multi-Objective Data Linked Resolutions (104105)

Conflict Probe improvements enhance controllers ability to accommodate pilot requests for flight plan changes by providing conflict detection and trial planning in en route operations.

Benefits

The future conflict probe increases efficiency of airspace use in the en route domain. It assists in synchronizing en route traffic by identifying potential separation violations, both aircraft/aircraft and aircraft/airspace, early enough to avoid them. This results in better management and balance of the sector-traffic capacity. The conflict probe also improves the controller□s ability to accommodate pilot requests for flight plan changes, thereby enabling the user to fly the most desirable route. This, in turn, reduces delays and costs to the user. User-requested reroute percentage being granted will increase saving time and fuel.

Key Related Systems

Airport Surveillance Radar-Model 9 and Mode Select SLEP
Common Automation Platform - Work Package 1
Flight Object Management System - En Route
Integrated Information Workstation - Build 1

Issues

none identified

Operational Improvement

Wake Vortex Prediction (104113)

Controllers require a more accurate prediction of wake vortex conditions, caused by aircraft arriving or departing from airports.

Benefits

Runway operations will be sustained at a higher level, resulting in both time and fuel savings. Operations efficiency would be another benefit.

Key Related Systems

Wake Vortex System

Issues

none identified

Capability Surface

Operational Improvement

Current Surface Traffic Management (104201)

Controllers, airline ramp tower personnel, and pilots provide surface synchronization using procedural and visual means. Controllers issue taxi clearances and instructions to provide optimum and predictable flows of traffic by communicating with pilots and vehicle operators on the airport surface. At peak times, controllers manage flow by using dedicated taxiways for arrivals or departures. They establish sequences to support the most expeditious use of departure runways or flow into ramp areas.

Benefits

Current operations are provided in the NAS.

Key Related Systems

Airport Movement Area Safety System
Airport Surface Detection Equipment-Model 3
Enhanced Terminal Voice Switch
Flight Data Input/Output
Integrated Communications Switching System Type I
Integrated Communications Switching System Type II
Rapid Deployment Voice Switch Type I
Small Tower Voice Switch
Surface Movement Advisor (Free Flight Phase 1)
Systems Atlanta Information Display System
Ultra High Frequency Airborne Radios
Ultra High Frequency Ground Radios
Very High Frequency Airborne Radios
Very High Frequency Ground Radios

Issues

none identified

Operational Improvement

Full Surface Traffic Management (104206)

Improved decision support tools integrated into future automation systems use aircraft intent, velocity, and position information, provided by future surveillance and communication systems, for more accurate current position information and traffic synchronization planning. The tools also expand collaboration between controllers, dispatchers, and traffic flow managers, resulting in enhanced management of aircraft and vehicular traffic on the airport surface.

Benefits

Taxi times will decrease with improved traffic flow and increased situational awareness. System efficiency will improve due to the improved planning data stemming from additional insight into moving active traffic back to the departure gate. These enhancements will result in time and fuel savings and more efficient operations.

Key Related Systems

Airport Surface Detection Equipment Model X
Automatic Dependent Surveillance-Broadcast Avionics
Broadcast Services Ground Station
Common Automation Platform - Work Package 1
Common Display Subsystem - Remote Phase 1
Common Display Subsystem - Remote Phase 2
Communications Management System
Flight Object Management System - Terminal
Integrated Information Workstation - Build 1
NAS Voice Switch
Surface Traffic Information Processor
Surveillance Data Network
System Wide Information Management Spiral 3
Traffic Information Service-Flight Information Service Broadcast Server
Ultra High Frequency Ground Radios
Very High Frequency Airborne Radios
Very High Frequency Ground Radios

Issues

None

Database Last Updated On:16-Aug-2006 13:14
v6.0.1 20060823

processing time: 1.672 seconds